Supporting information for

A hydride-induced reduction strategy for fabricating palladium-based core-shell bimetallic nanocrystals

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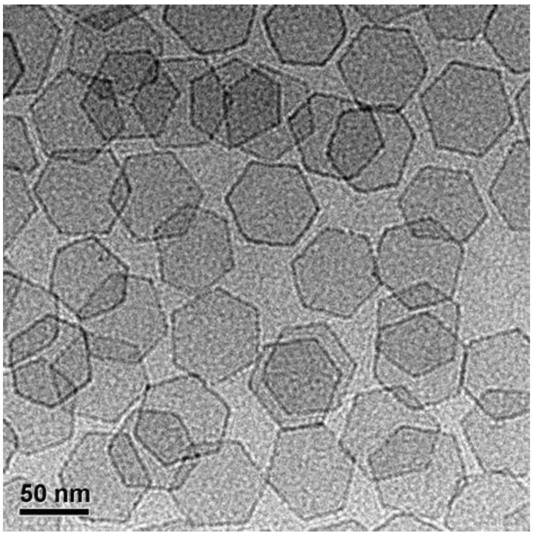

Fig. S1. TEM image of Pd nanosheet seeds.

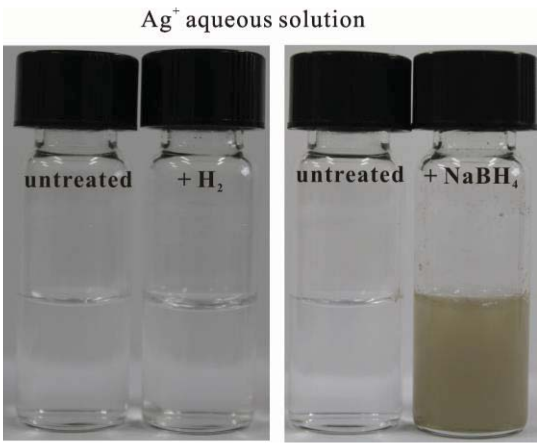

Fig. S2. Digital photographs of Ag^+ aqueous solutions before and after treated with H_2 and $NaBH_4$.

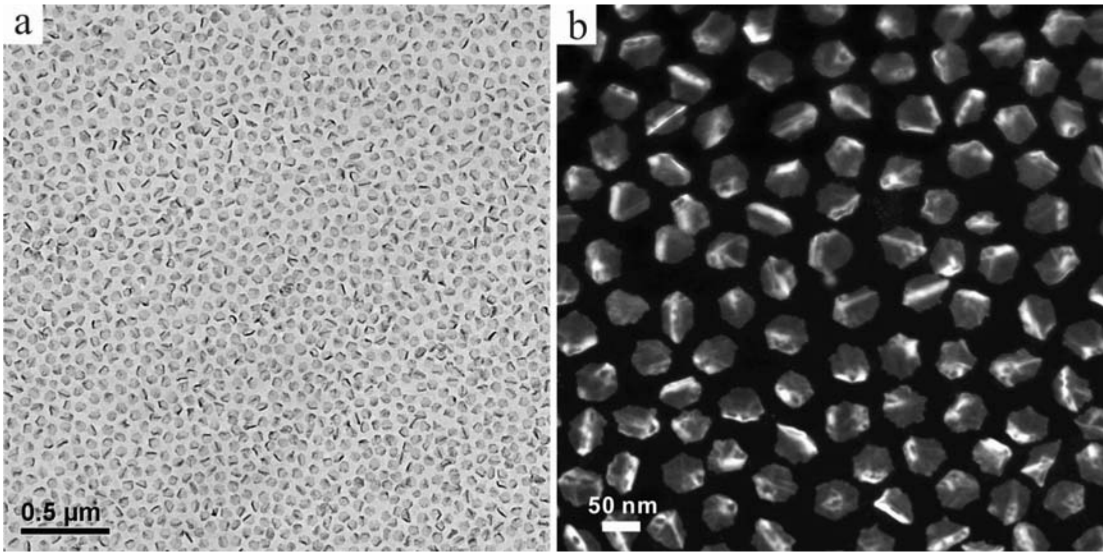

Fig. S3. (a) Large-area TEM and (b) HAADF-STEM images of Pd@Ag (1:1) core-shell bimetallic nanosheets.

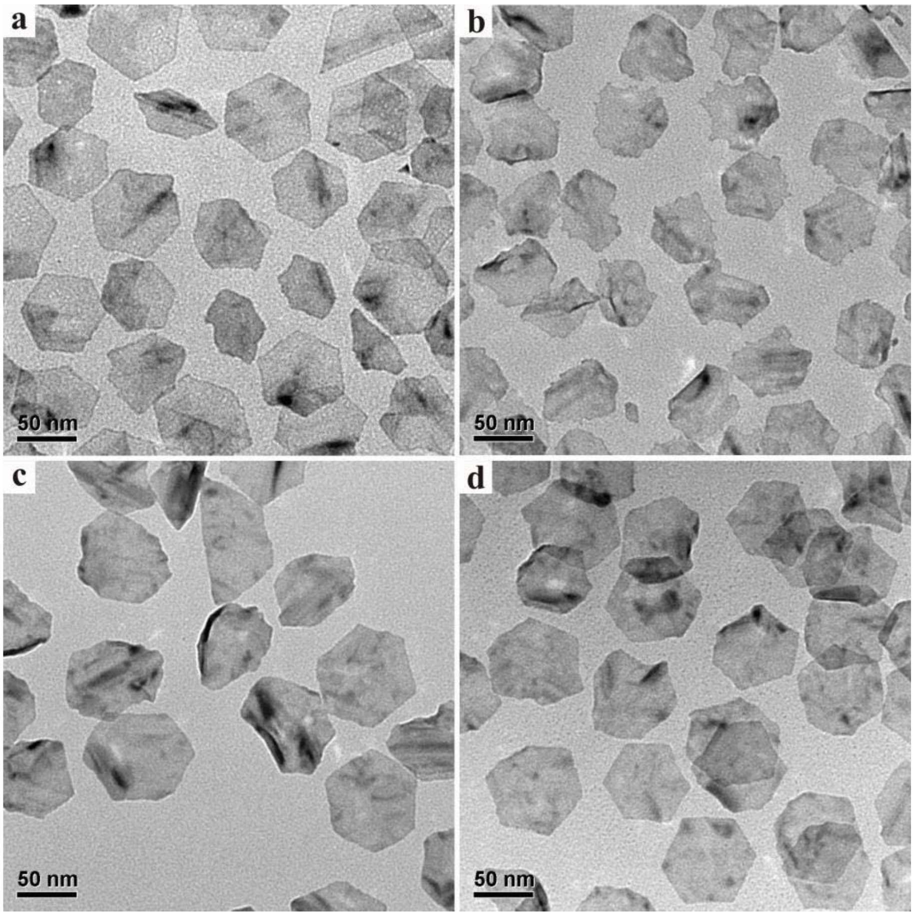

Fig. S4. TEM images of the Pd@Ag nanoplates prepared by using different $AgNO_3$/Pd molar ratios: (a) 0.5, (b) 2, (c) 5, and (d) 10.

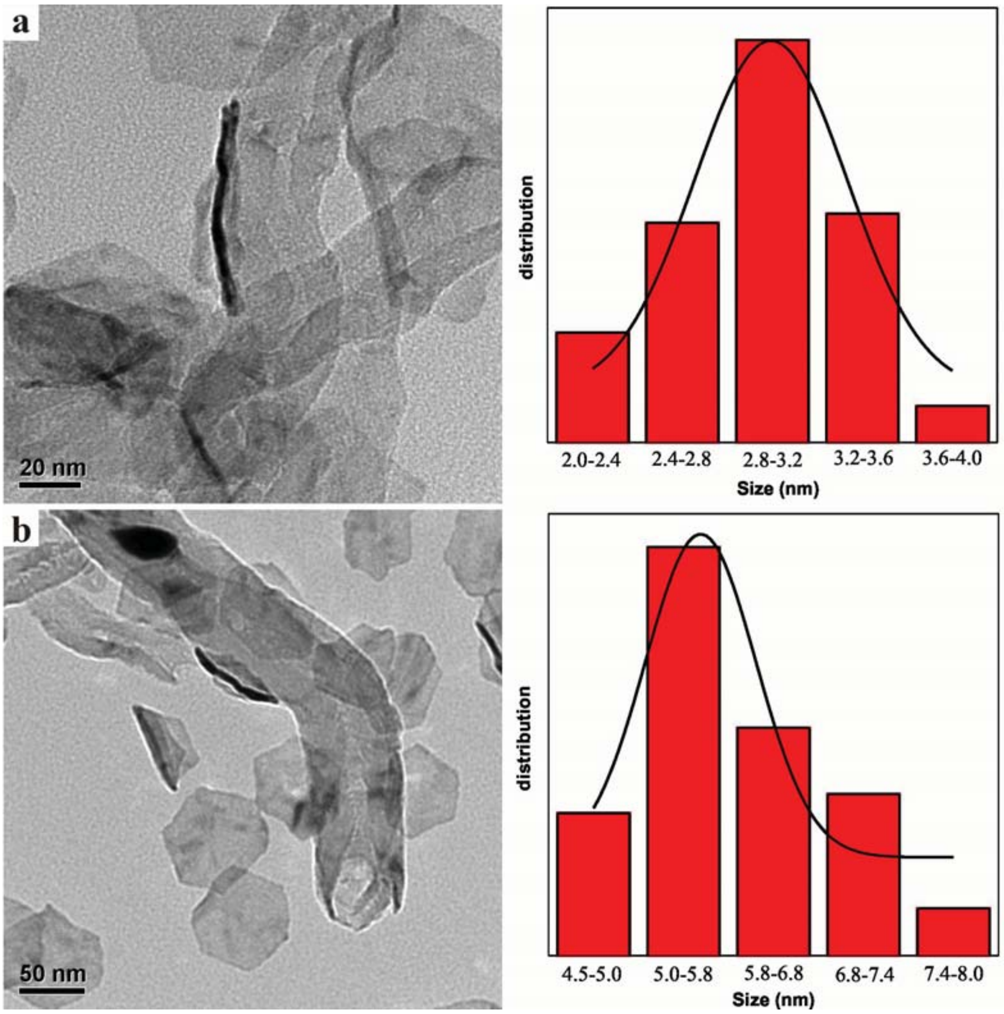

Fig. S5. The thickness of Pd@Ag nanosheets obtained by using different $AgNO_3$/Pd ratios (i.e. 1, 10).

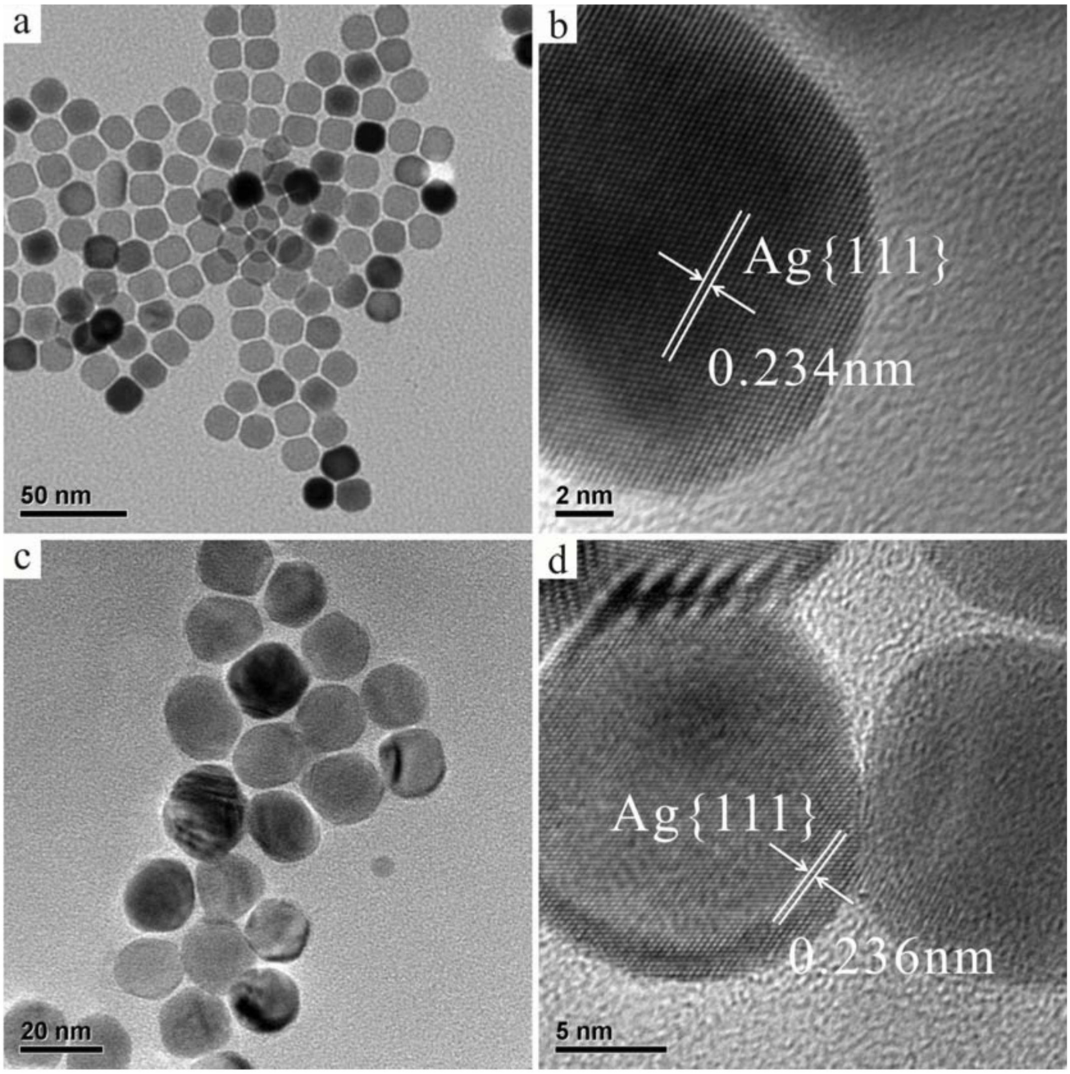

Fig. S6. (a) Representative TEM and (b) HRTEM images of Pd cube@Ag(1:1) core-shell bimetallic NCs. (c) Representative TEM and (d) HRTEM image of Pd cube@Ag(1:10) core-shell bimetallic NCs.

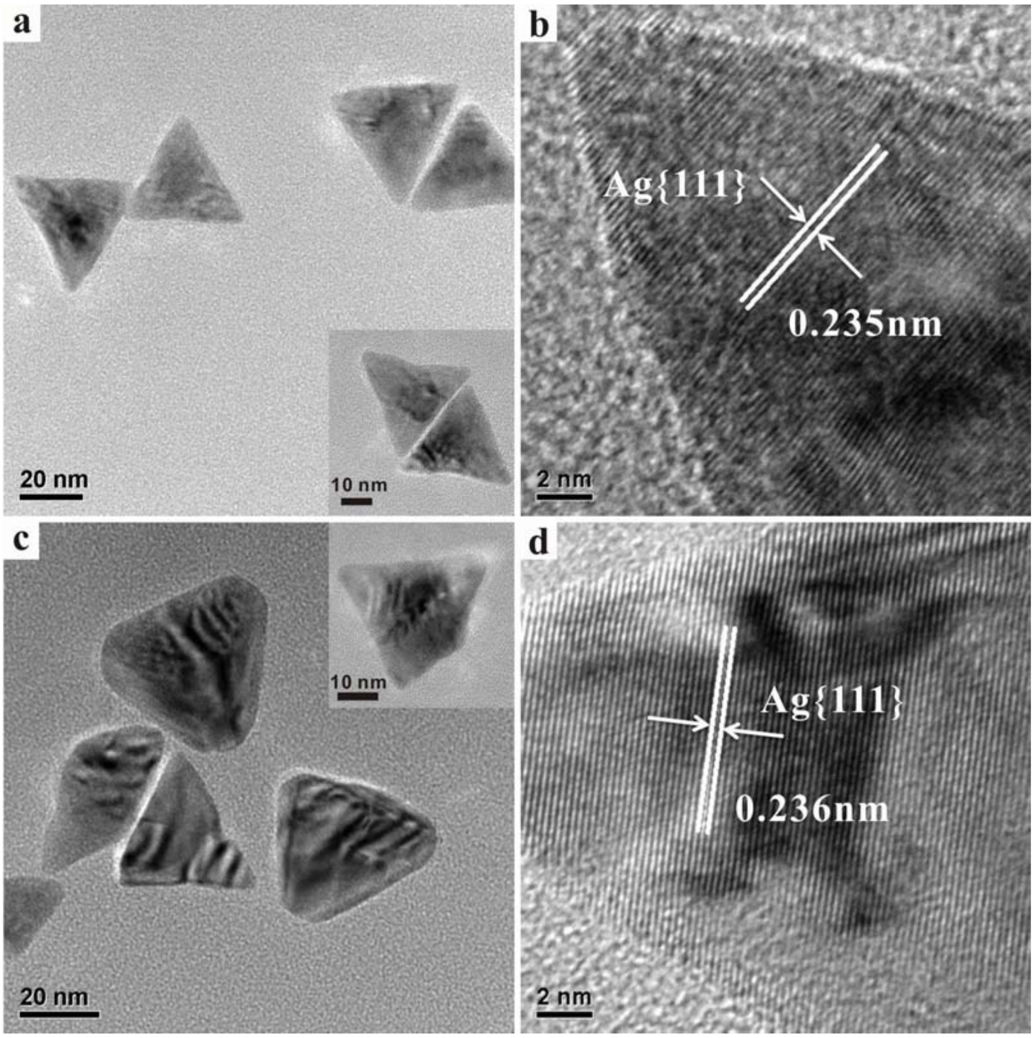

Fig. S7. (a) Representative TEM and (d) HRTEM images of Pd tetrapod@Ag(1:1) core-shell bimetallic NCs.(c) Representative TEM and (d) HRTEM images of Pd tetrapod@Ag (1:10) bimetallic NCs.

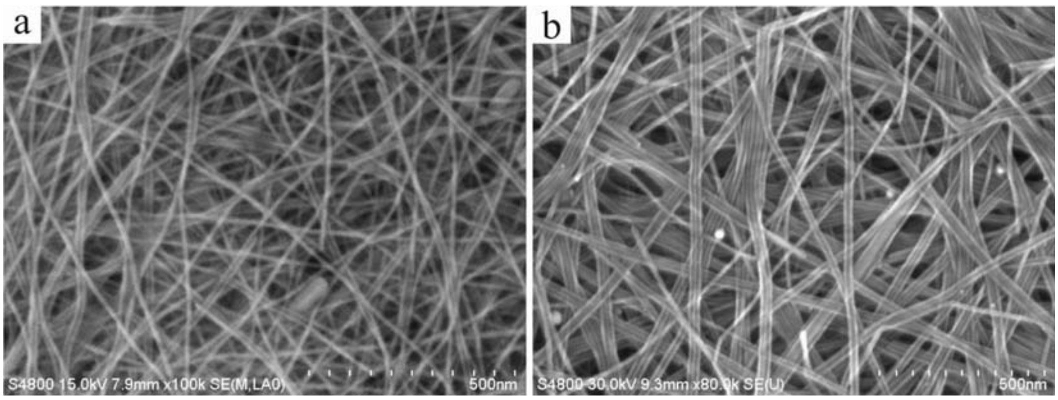

Fig. S8. SEM images of (a) Pd NWs and (b) Pd NWs@Ag.

Table S1. Elemental Analysis of Pd@Ag nanosheets prepared by using various $AgNO_3$/Pd ratios.

samples	initial Pd/$AgNO_3$ ratio	Content(ug/mL) in the obtained core-shell nanosheets		Pd/Ag
		Pd	*Ag*	
Pd@Ag	1:0.50	9.22	2.69	1:0.29
Pd@Ag	1:1.00	24.30	20.60	1:0.85
Pd@Ag	1:5.00	5.60	23.10	1:4.13
Pd@Ag	1:10.00	11.60	49.40	1:4.25

Table S2. pH values of the solutions before and after the deposition of Ag on Pd nanosheets in the presence of H_2.

samples	$AgNO_3$/Pd initial ratio	Reaction time (min)	pH value (before reaction)	pH value (after reaction)	theoretical value*
Pd@Ag	1:0.50	60	4.52	2.90	
Pd@Ag	1:1.00	60	4.54	2.52	2.18
Pd@Ag	1:5.00	60	4.81	1.89	
Pd@Ag	1:10.00	60	4.79	1.76	

* The theoretical value is calculated by assuming the deposition of 1 mol Ag by 1 mol H.

Table S3. Elemental Analysis of Pd@Ag nanosheets prepared by using various H/Pd ratios.

samples	H/Pd initial ratio	Content(ug/mL) in the obtained core-shell nanosheets		Pd/Ag
		Pd	*Ag*	
Pd@Ag	1:1	37.30	32.00	1:0.86
Pd@Ag	2:1	28.10	58.10	1:2.07
Pd@Ag	5:1	52.80	208.0	1:3.94
Pd@Ag	10:1	14.30	60.80	1:4.25

Table S4. Particle sizes of Pd@Ag nanocubes using two different $AgNO_3$/Pd ratios at 1 and 10.

samples	Pd cubes	Pd @Ag cubes (1:1)	Pd @Ag cubes (1:10)
Size/nm	13.74	15.56	16.76